

NOFBX Single-Stage-to-Orbit Mars Ascent Vehicle Engine, Phase II

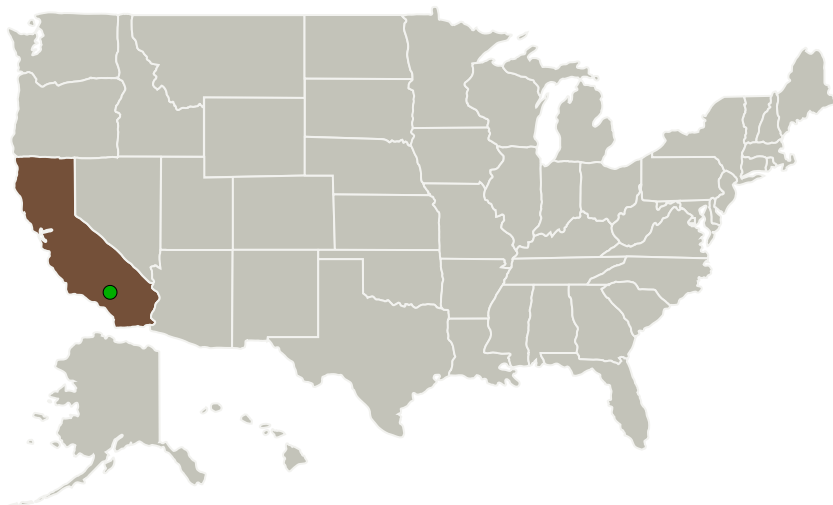
Completed Technology Project (2011 - 2013)




Project Introduction

We propose the continuation of our research and development of a Nitrous Oxide Fuel Blend (NOFBXTM) Single-Stage-to-Orbit (SSTO) monopropellant propulsion system for future use on a Mars Ascent Vehicle (MAV) as part of the Mars Sample Return (MSR) architecture. This liquid monopropulsion system architecture is also readily scalable to alternative planetary ascent vehicles (PAV's) and sample return systems. Key areas of our proposed development and demonstration are in the nozzle miniaturization to support compact vehicle packaging into an MSR vehicle and use of a passive thrust vector control mechanism with three engines to avoid the necessity of a low temperature gimbal mechanism.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Firestar Engineering, LLC	Lead Organization	Industry	Mojave, California
 Armstrong Flight Research Center(AFRC)	Supporting Organization	NASA Center	Edwards, California



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Primary U.S. Work Locations

California

Project Transitions



June 2011: Project Start



August 2013: Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/139283>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Firestar Engineering, LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

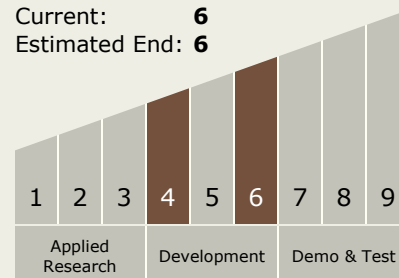
Greg S Mungas

Technology Maturity (TRL)

Start: 4

Current: 6

Estimated End: 6



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Technology Areas

Primary:

- TX01 Propulsion Systems
 - └ TX01.1 Chemical Space Propulsion
 - └ TX01.1.1 Integrated Systems and Ancillary Technologies

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System